WM-EX90

SERVICE MANUAL

AEP Model
E Model

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
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Model Name Using Similar Mechanism	New Mechanism
Tape Transport Mechanism Type	MT-WMEX90-46

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使用時は添付資料も参照のこと
Refer to the additional documents.

CASSETTE PLAYER

SONY®

SECTION 1
SERVICING NOTE

This set detects reel rotation by PH801 (photo sensor). Reel rotation cannot be detected when the main board is removed, because PH801 is mounted on the main board. As a result, the auto-off circuit and tape end detection will misoperate. And, up and down of head and power supply of playback circuit cannot operate when the main board is removed, because S306 (HEAD switch) is mounted on the main board. (S306 is linked to on and off of the plunger solenoid on mechanism deck.)
Therefore, operation check of the mechanism deck and voltage check can be performed by the method shown below.

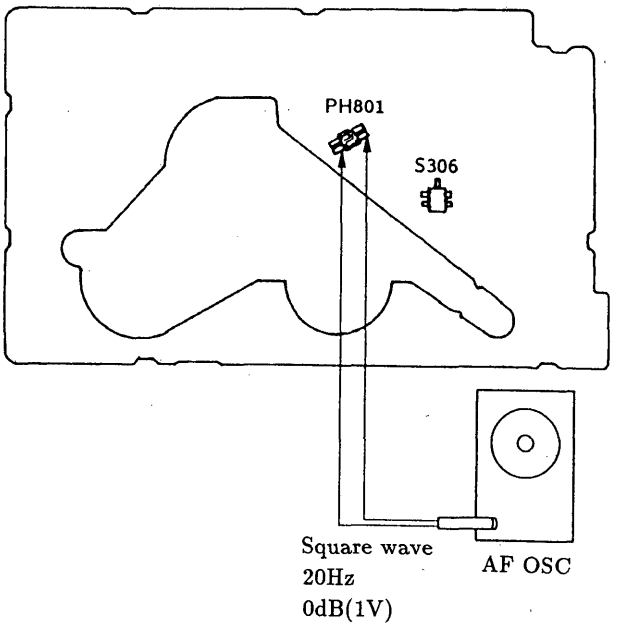
FF/REW mode

(1) Apply the square wave signal to the PH801 (refer to diagram)
(2) Turn on S708(control board) CLOSE switch.
(3) Press the ▶▶ or ◀◀ key.

PLAY mode

(1) Apply the square wave signal to the PH801 (refer to diagram)
(2) Turn on S708(control board) CLOSE switch.
(3) Press the ▶▶ or ◀◀ key, then press the STOP key.
(4) Press the ▶ key.
(5) Turn on S306 1 to 1.5 seconds later. (refer to diagram)

— Main board (Parts mounted side) —



Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270℃ during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the eqipment manufacturer. Discard used batteries according to manufacturer's instructions.

ADVARSEL!

Lihiumbatteri — Eksplosionfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri
af samme fabrikat og type.
Lever det brugte batteri tilbage til leverandøren.

ADVARSEL

Lithiumbatteri — Eksplosjonsfare.
Ved utskifting benyttes kun batteri som
anbefalt av apparatfabrikanten.
Brukt batteri returneres apparatleverandøren.

VARNING

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent
typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens.
instruktion.

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan
tyypiin. Hävitä kaytetty paristo valmistajan ohjeiden
mukaisesti.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

Before operating the unit, please read this manual thoroughly and retain it for future reference.

Parts Identification (See Illustration A)

Main unit

1. **Battery connecting points(rear)**
2. **Cassette holder**
3. **COUNTER RESET button**
   Press to reset the counter to 000.
4. **LCD display window**
5. **HOLD switch**
   Slide to HOLD to avoid accidental operation of the unit or remote controller. You can operate the unit with the remote controller when the HOLD switch of the unit is set and you can operate the unit with its buttons when the HOLD switch of the remote controller is set.
6. **Battery compartment**
7. **REW/REVIEW button**
   PLAY/DIR button
   FF/CUE button
   STOP button
8. **REMOTE selector**
   Slide to ON when using supplied headphones with remote controller.
9. **MODE (tape transport) selector**
   ⇆ Plays back both sides of the tape once. When the playback starts from the reverse side of the tape, the unit plays only that side.
   ⇄ Plays back both sides of the tape repeatedly.
10. **DOLBY NR (noise reduction) selector**
    Slide to ON for Dolby B NR-processed tapes.
11. **MEGA BASS selector**
    Set to the desired bass position. Bass is boosted in the order of NORM, MID, and MAX.
12. **OPEN switch**
13. **REPEAT button**
14. **REMOTE/🎧 (headphones) jack**
15. **VOL (volume) control**
16. **CLOCK button**
17. **−/12H button**
18. **+/24H button**

Headphones with remote controller

1. **PLAY/DIR button**
2. **FF/cue button**
3. **REW/review button**
4. **STOP button**
5. **REPEAT button**
6. **Plug**
7. **HOLD switch**
8. **Receiver clip**
9. **VOL control**

LCD display

The tape counter is displayed during playback. About 3 seconds after pressing STOP, the time appears instead of the counter. To display the counter temporarily, keep STOP pressed.

1. **Tape transport indicator**
   Indicates which side of the tape is being played back.
2. **HOLD indicator**
3. **BATT(battery) indicator**
4. **Playback direction indicator**
5. **Fast forward/cue and fast rewind/review indicators**
6. **REPEAT indicator**
7. **Clock/tape counter**

Inserting the Lithium Battery (See Illustration B)

Insert the lithium battery to use the LCD display. When the clock becomes slow or the LCD display becomes weak, replace the lithium battery with a new one.

1. Open the rechargeable battery compartment and slide the OPEN switch to OPEN.
2. Insert the lithium battery with the + side facing down and close the covers of the compartments.

Note

- Keep the lithium battery out of the reach of children. Should the battery be swallowed, immediately consult a doctor.

Using with the Rechargeable Battery (See Illustration C)

You can use only Sony NC-6WM (supplied) or NC-5WM (optional) rechargeable battery and can recharge them approx. 300 times.

1. Slide the selector to designate the kind of battery you are charging.
2. Plug the charger into a wall outlet.
3. Open the cover of the battery compartment and insert the battery.
4. Close the cover.

High speed charging (50% charge to 10 minutes)	After the charge indicator blinks rapidly for approx. 5–10 seconds (while the charger is checking the remaining amount of power), it begins to blink slowly and high speed charging starts.* When the indicator lights steadily (10 minutes later), the battery is 50% charged.
Full charge	Leave the charger for approx. 20 minutes more until the indicator goes off. (Total charging time: approx. 30 minutes)

You cannot charge the NC-5WM at the high speed mode.

*** If after blinking rapidly, the indicator lights steadily instead of blinking slowly,** power still remains in the rechargeable battery; therefore, charging is performed at normal speed instead of high speed. Charging is completed when the indicator goes off. Charging time varies according to the remaining power.

Notes

- The nameplate indicating operating voltage of the battery charger, power consumption, etc. is located on the bottom exterior of the charger.
- Do not use the battery charger near a receiver. Doing so may interfere with the receiver.
- Detach the battery from the charger when the indicator goes off. Overcharging (for more than 20 hours) may damage the battery.
- Do not short circuit the battery connecting points of the unit.
- When the rechargeable battery is brand new, it cannot be fully recharged. Also, when the battery becomes old or has been used excessively, it can no longer be fully recharged.
- Remove the rechargeable battery when you use the unit with an external power source.

Using with Batteries (See Illustration D)

You can operate the unit with one or two batteries. When you use two batteries, be sure to replace both of them at the same time.

1. Attach the battery case to the unit by turning the screws toward the way to LOCK position until the case is secure.
2. Open the cover(s) of the case.
3. Insert one or two batteries with correct polarity into the case.

When the battery becomes weak, the unit is shut off and the BATT indicator flashes. If this happens, replace the battery or recharge the rechargeable battery.

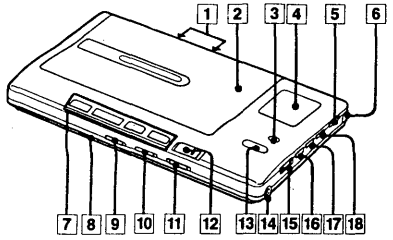
When the cover of the battery case is detached accidentally, attach it as shown in the illustration.

Notes

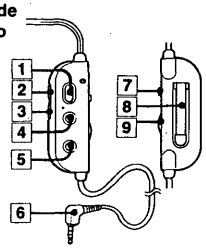
- Make sure you attach the battery case to the unit before inserting batteries into the battery case; otherwise, the unit may not work properly. If problem occurs, remove all the batteries, make sure the display is off, and start over again using the correct procedures.
- Do not short circuit the terminal of the battery case.
- When you are not using the unit for a long period of time, remove the battery (batteries) from the case to avoid damage caused by battery leakage and corrosion.
- Do not mix a new battery with an old one, or mix different types of batteries.

A Parts Identification
Nommenclature
Identificación de las partes
Identificação das partes

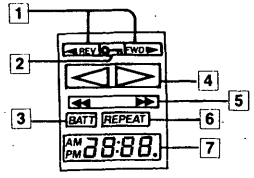
Main unit
Appareil principal
Unidad principal
Aparelho principal



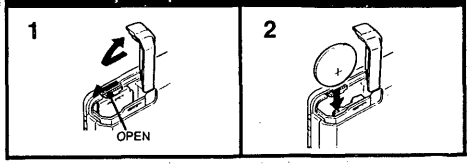
Headphones with remote controller
Casque avec télécommande
Auriculares con telemando
Auscultadores com telecomando



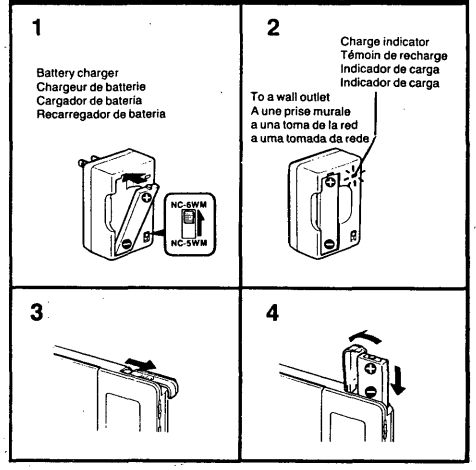
LCD display
Affichage LCD
Pantalla de cristal líquido
Mostrador LCD



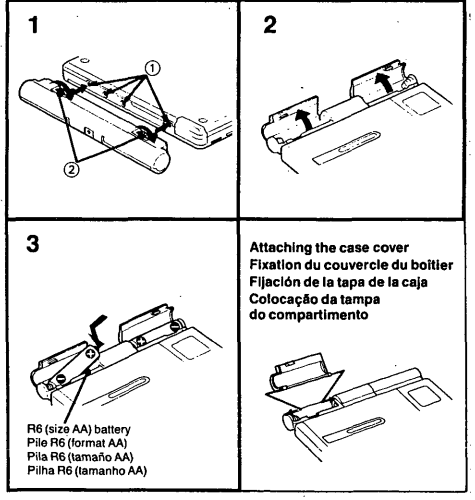
B Inserting the Lithium Battery
Installation de la pile au lithium
Colocación de la pila de litio
Inserção da pilha de lítio



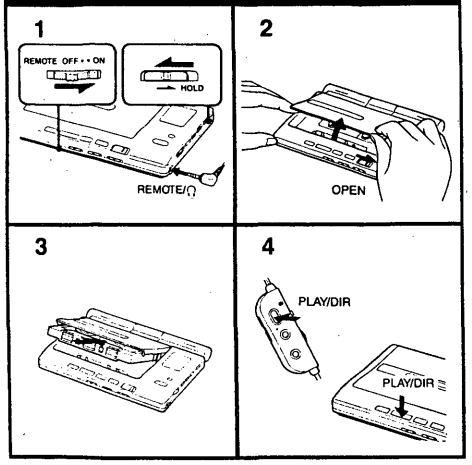
C Using with the Rechargeable Battery
Fonctionnement sur pile rechargeable
Empleo con la batería
Alimentação com bateria recarregável



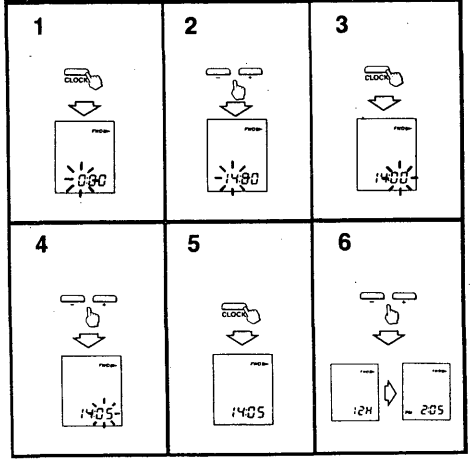
D Using with Batteries
Fonctionnement sur pile
Empleo con pilas
Alimentação com pilhas



E Playing Back Tapes
Lecture de bande
Reproducción de cintas
Leitura de cassetes



F Setting the Clock
Réglage de l'horloge
Puesta en hora del reloj
Acerto do relogio



Tape Operation
Lecture de bande
Operación de la cinta
Operação da fita

Operation Exploitation Operación Procedimento	LCD Forward side Face avant Cara frontal Lado frontal	LCD Reverse side Face arrière Cara posterior Lado reverso
To play the other side of cassette during playback Pour écouter l'autre face de la cassette pendant la lecture Para reproducir la otra cara del cassette durante la reproducción Para alterar o lado em execução da cassete durante a leitura	Press PLAY/DIR. Appuyer sur PLAY/DIR. Presione PLAY/DIR. Pressione PLAY/DIR.	
To stop the tape Pour arrêter la cassette Para detener la cinta Para parar a fita	Press STOP. Appuyer sur STOP. Presione STOP. Pressione STOP.	
To forward the tape rapidly Pour avancer la bande rapidement Para avanzar rápidamente la cinta Para avançar a fita rapidamente	Press FF/CUE. Appuyer sur FF/CUE. Presione FF/CUE. Pressione FF/CUE.	
To rewind the tape rapidly Pour rebobiner la bande rapidement Para rebobinar rápidamente la cinta, Para rebobinar a fita rapidamente	Press REW/REVIEW. Appuyer sur REW/REVIEW. Presione REW/REVIEW. Pressione REW/REVIEW.	
To locate a desired position during playback Pour localiser une certaine portion pendant la lecture Para localizar una parte deseada durante la reproducción Para localizar o trecho desejado durante a leitura	Keep pressing FF/CUE or REW/REVIEW during playback, then release the button. Maintenir FF/CUE ou REW/REVIEW enclenchée pendant la lecture, puis libérer la touche. Mantenga presionada FF/CUE o REW/REVIEW durante la reproducción, y después suelte la tecla. Mantenha FF/CUE ou REW/REVIEW pressionada durante a leitura, e em seguida solte a tecla.	
To repeat a designated portion during playback Pour répéter une certaine portion pendant la lecture Para repetir una parte designada durante la reproducción Para repetir o trecho desejado durante a leitura	1 Press REPEAT at the beginning of the portion you wish to repeat. 2 Press REPEAT again at the end of the portion 1 Appuyer sur REPEAT au début de la portion à répéter. 2 Appuyer de nouveau sur REPEAT à la fin de la portion à répéter. 1 Presione REPEAT al comienzo de la parte que desee repetir. 2 Vuelva a presionar REPEAT al final de tal parte. 1 Pressione REPEAT no início do trecho que deseja repetir. 2 Pressione REPEAT novamente no término do trecho.	
To stop repeating Pour arrêter la répétition Para detener la repetición Para parar a repetição	Press PLAY/DIR, REPEAT, STOP, FF/CUE, or REW/REVIEW. Appuyer sur PLAY/DIR, REPEAT, STOP, FF/CUE ou REW/REVIEW. Presione PLAY/DIR, REPEAT, STOP, FF/CUE o REW/REVIEW. Pressione PLAY/DIR, REPEAT, STOP, FF/CUE ou REW/REVIEW.	

Playing Back Tapes (See Illustration E)

1 Connect the supplied headphones with the remote controller firmly to the REMOTE/∩ jack, slide the REMOTE switch to ON, and release the HOLD switch of the unit if it is set.
2 Open the cassette holder by sliding the OPEN switch and insert the cassette.
3 Press PLAY/DIR.
To adjust the volume to optimal position, set the VOL control of the unit to around 6 and the one of the remote controller to the maximum.

Notes
- Do not slide the OPEN switch during playback.
- The unit may not repeat exactly the designated portion when there is slack in the tape, or after you use the repeat function repeatedly.
- You cannot turn down volume completely with the remote controller.

Setting the Clock (See Illustration F)

Before setting the clock, make sure that the lithium battery is positioned securely in the battery compartment.
1 Press CLOCK for more than 3 seconds until the hour digit(s) start(s) flashing.
2 Set the hour using + or −, advancing one digit at a time to move one hour forward or back. When + or − is kept pressed, the digits advance rapidly.
3 Press CLOCK to make the minute digits flash.
4 Repeat step 2 to set the minute(s).
5 Press CLOCK again to start the clock.
6 Choose either 12-hour or 24-hour time-keeping by pressing either − (12-hour) or + (24-hour). You can change the time-keeping type either before or after setting the time.

Precautions

- Do not drop the unit or expose it to shock.
- Do not operate unit near an AM receiver as it may interfere with the receiver.
- Avoid exposure to temperature extremes, direct sunlight, moisture, sand, dust, or electrical shock. Never leave the unit in a car parked in the sun. If you use the unit in temperature outside the range of 0 to 40°C (32 to 104°F), the display may become dim or the indication may change slower than usual.
- If the unit has not been used for a long time, set it in the playback mode and warm it up for a few minutes before inserting a cassette.

Tips on headphone listening

- Avoid listening with your headphones: while driving, cycling, etc. or for an extended time at a high volume.
- Remember not to disturb those near you with the sound from your headphones.
- Keep the plug of your headphones clean by wiping it with a dry, soft cloth to obtain the optimum sound.
- Do not blow upon the ear pieces.

- The supplied headphones with remote controller is to be used only with this unit.
- Do not use earphones or headphones supplied with other models though they have the same plug as the headphones supplied with this unit.

How to use headphones

Open the headphones as shown in the illustrations. Wear the ear piece marked R on your right ear and the one marked L on your left ear. The very right illustration shows how to adjust the headphones.

AC power adaptor

Connect the AC-E15L AC power adaptor (optional) to the DC IN jack on the battery case. Use only the recommended AC power adaptor or car battery cord manufactured by Sony.

Polarity of the AC-E15L

Remove the rechargeable battery when you use the unit with an AC power adaptor.

Cleaning

Clean the tape head with a cleaning cassette such as the Sony CHK-1 after every 10 hours of use. Clean the exterior of the unit with a soft cloth moistened in water. Do not use alcohol, benzine, or thinner, or the like.

Specifications

Frequency response (DOLBY NR*1 off)
30 – 18,000 Hz
Output
Ear receiver (headphones) with remote controller jack
load impedance 8 – 300Ω
Power output
5mW + 5mW
Battery life

Battery	Playback (hours)
Rechargeable NC-6WM fully charged	Approx. 2.5
Sony SUM-3 (NS) × 2	Approx. 6
Sony AM3 (N) × 2	Approx. 15
Rechargeable NC-6WM with Sony AM3 (N) × 2	Approx. 17.5

For maximum performance, we recommend the use of alkaline batteries.
Power requirements
1.5 V DC
Rechargeable battery
One R6 (size AA) battery or two R6 batteries
Dimensions
Approx. 154.2 × 16.7 × 93.7 mm (w/h/d)
(6 1/8 × 11/16 × 3 3/4 in.) excl. projecting parts and controls
Approx. 154.2 × 19.5 × 95.4 mm (w/h/d)
(6 1/8 × 25/32 × 3 7/8 in.) incl. projecting parts and controls
Weight
Approx. 250 g (8.8 oz) incl. rechargeable battery, excl. other accessories
Accessories supplied
Battery case (1)
Lithium battery (1)
Rechargeable battery NC-6WM (1)
Battery charger (1)
Headphones with remote controller (1)
Carrying case (1)

Design and specifications are subject to change without notice.

* 1 Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
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Optional accessories
Rechargeable battery NC-6WM
Lithium battery CR2016

Your dealer may not handle some of the above listed optional accessories. Please ask the dealer for detailed information.

WM-EX90

SECTION 3
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured alcohol moistened swab :
   playback head rubber belts
   capstan idlers
   pinch roller
2. Demagnetize the playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage (1.3V) unless otherwise noted.

[Torque Measurement]

Mode	Torque Meter	Meter Reading
FWD	CQ-102C	22 - 38g · cm 0.31 - 0.52oz · inch
FWD Back Tension		0.5 - 3.0g · cm 0.01 - 0.05oz · inch
REV	CQ-102RB	22 - 38g · cm 0.31 - 0.52oz · inch
REV Back Tension		0.5 - 4.0g · cm 0.01 - 0.05oz · inch
FF	CQ-201B	more than 60g · cm more than 0.8oz · inch
REW		more than 60g · cm more than 0.8oz · inch

[Tape Pulling Force Measurement]

Mode	Tension Meter	Meter Reading
FWD	CQ-403A	more than 50g more than 1.77oz
REV	CQ-403R	more than 50g more than 1.77oz

3-2. ELECTRICAL ADJUSTMENTS

PRECAUTION

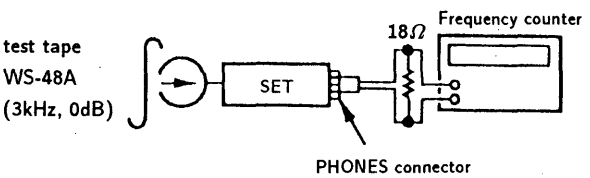
1. Power supply voltage : 1.3V
2. Switch position
   DOLBY NR switch : OFF
   DBB switch : NORM

TEST TAPE

Type	Signal	Used for
WS-48A	3kHz, 0dB	Tape speed adjustment

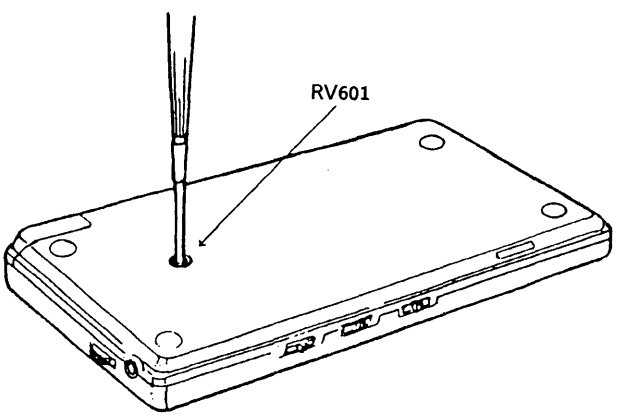
[Tape Speed Adjustment]

Procedure :



1. Playback WS-48A (tape center portion) in FWD mode. Adjust the RV601 so that the frequency counter reads 3,000 ± 30 Hz.
2. Playback WS-48A (tape center portion) in REV mode. Confirm that the reading of frequency counter is within 2.0% from the reading in step 1.

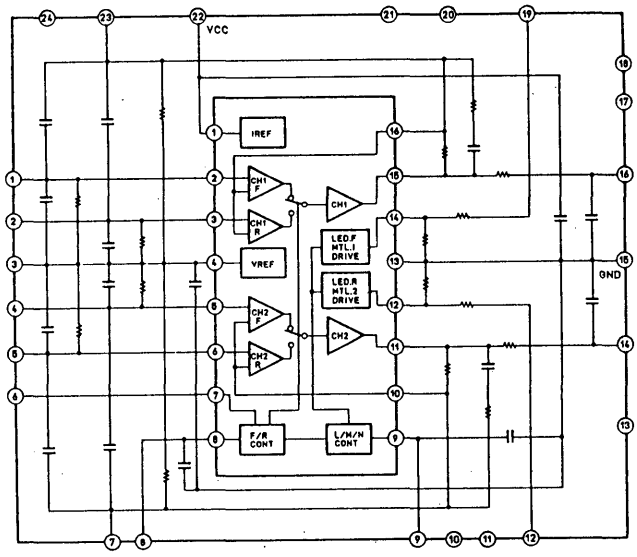
Adjustment Parts Location Diagram :



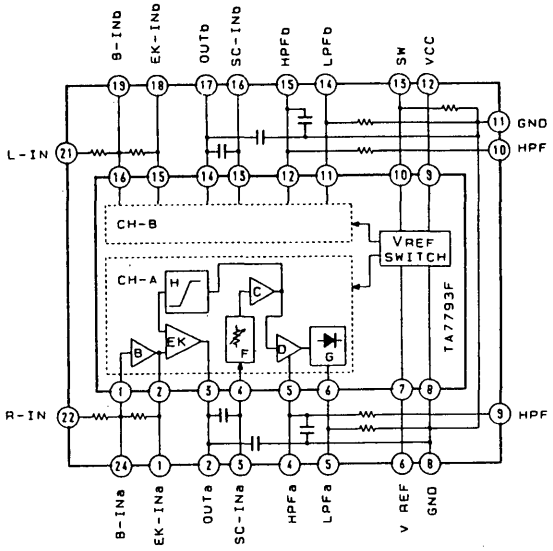
SECTION 4
DIAGRAMS

4-1. IC BLOCK DIAGRAMS

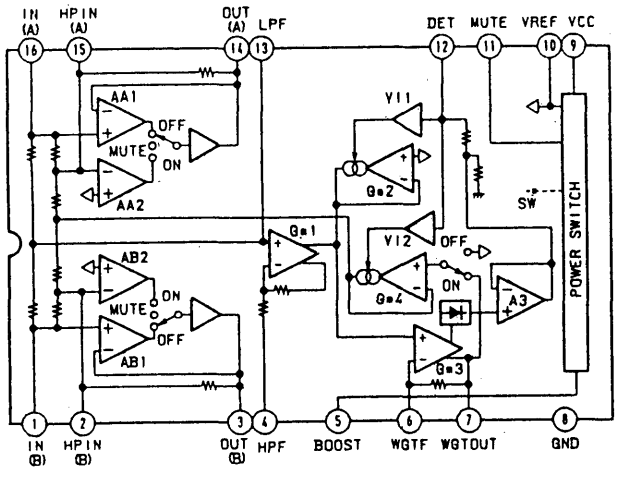
IC301 MHC8570EQ01



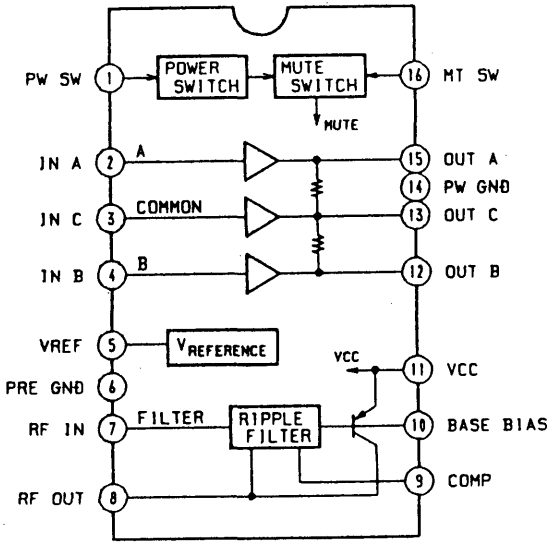
IC302 MHC8570DB001



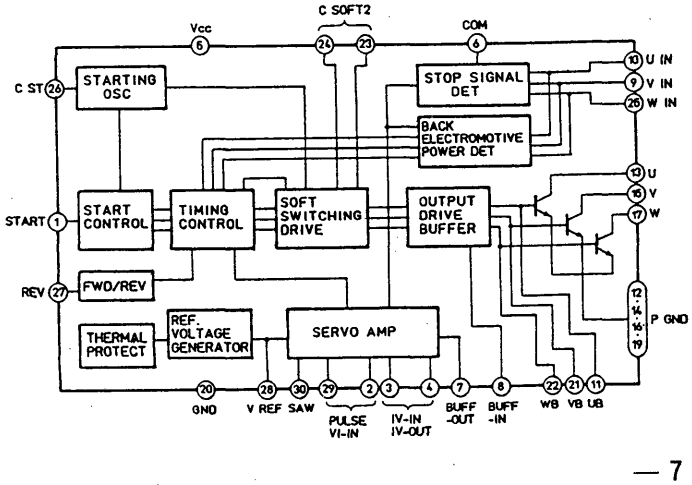
IC303 NJM2106M



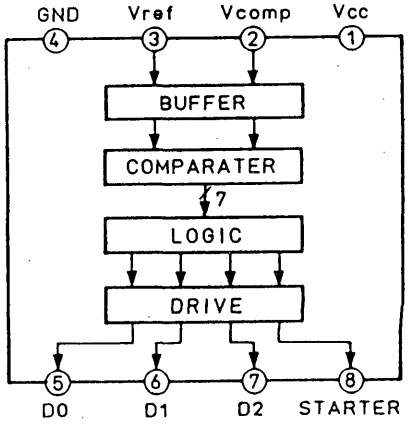
IC304 TA8145FN



IC601 TLP326ADB



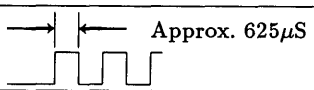
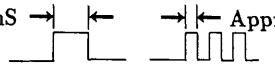
IC704 CXA1405AM



4-2. IC DESCRIPTION

IC1 System Controller (MSM6351L)

The system Controller IC controls DDC, motor, plunger, clock, LCD, detection of tape end and so forth by inputs from various switches on the main unit and the remote controller.

Pin No.	Signal Name	I/O	Terminal Function
32	DDC CTL	O	DC-DC converter (DDC) control output. When the DDC ramps up by pressing the switch on the main unit or the remote controller and microprocessor starts up, this port switches to High and the DDC remains "ON". This port switches to Low and the DDC turns off when the STOP key is pressed or operation is halted by the shut off.
33	REC CTL	O	Not used.
34	REQ	O	Not used.
35	CE	O	Not used.
36	BEEP	O	Beep output for IC304(Head amplifier)  Approx. 625μS
38	$\overline{XT}$	O	Oscillator connecting port (32 kHz)
39	XT	I	
40	V_{DD}		Power supply input. (3V)
41	V_{SS3}		−1.5V Power supply input. (Capacitor connection)
42	V_{SS2}		Power supply input. (GND)
43	V_{SS1}		1.5V Power supply input. (Capacitor connection)
44	V_{EE}		Internal Lodge power supply input
45	V_{OP}		Capacitor connecting port for internal power generation.
46	V_{CM}		
47	S_{OUT}	O	Not used.
48	S_{IN}	I	Not used.
49	$\overline{SCK}$	I	Not used.
57 - 59	COM1 - 3	O	LCD driver output
60 - 74	SEG1 - 15	O	
81	$\overline{MUTE}$	O	Mute output for audio signal. Low : Mute.
82	D2	I	Key data input from IC704(comparator). *1
83	D1	I	
84	D0	I	
85 - 88	P2-0 - P2-3	O	Key scan output *2
89 - 92	P3-0 - P3-3	O	Key scan input *2
93	M.BRK	O	Motor brake output. High : Brake
94	M.DIR	O	Motor direction control output. Low : Counterclockwise, High : Clockwise.
95	M.CTL	O	Motor on/off control output. High : Drive, Low : Stop.
96	POM	O	Control output for plunger(PM1) Approx. 30mS  Approx. 10mS
97	RESET	I	System reset input. High : Reset.
98 - 100	TEST1 - 3	I	Not used.

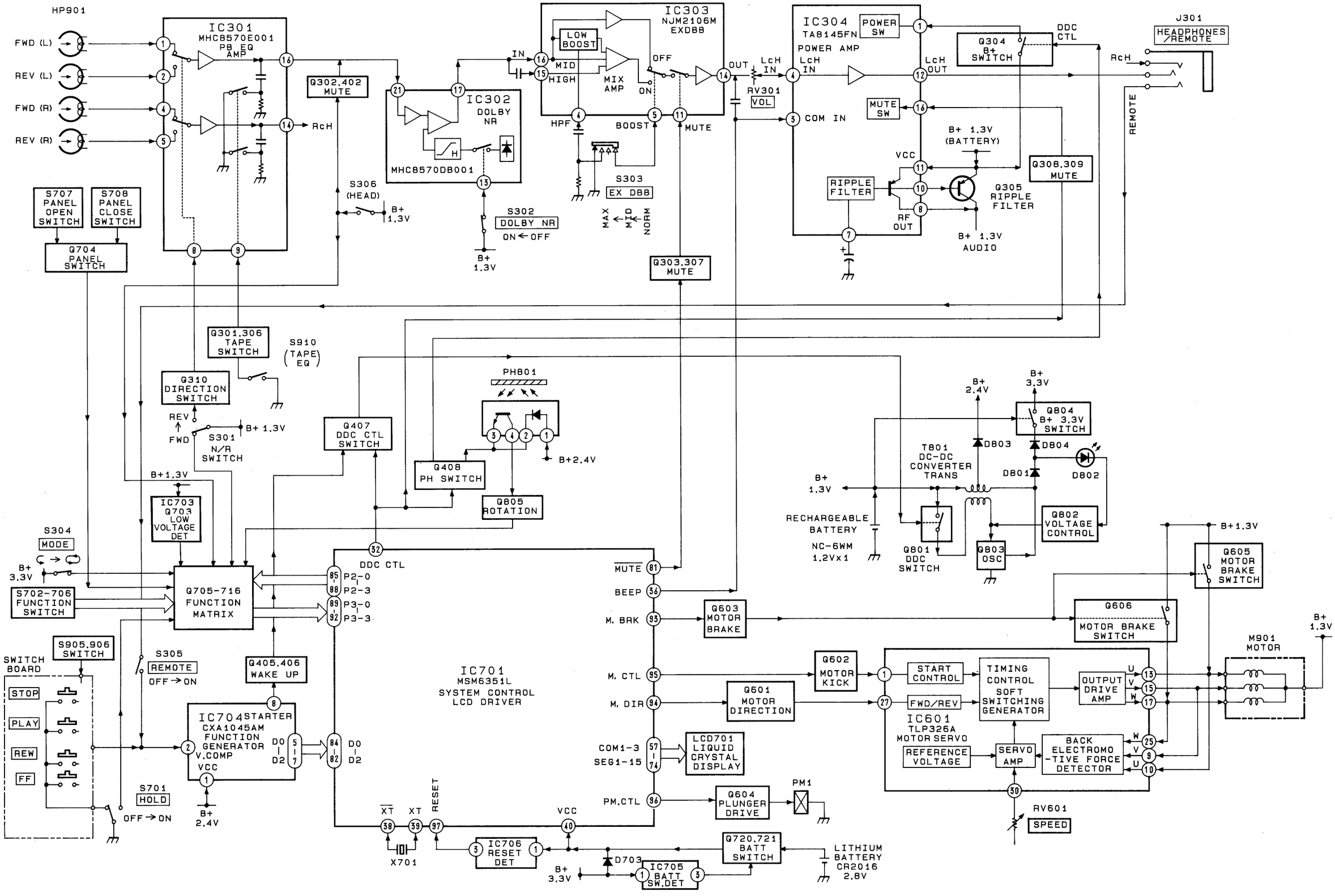
*1 3 bits data from IC704(comparator)

Switch input	D2	D1	D0
STOP	L	L	L
PLAY	L	L	H
REW	L	H	L
FF	L	H	H
RADIO/BAND	H	L	L
PRESET/REPEAT	H	L	H
REC	H	H	L

*2 Key scan input port

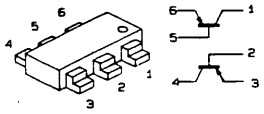
Key scan output	Key scan input	Signal	Function
88	89	COUNTER RESET	Reset the counter
86	89	+/24H	Clock display change to 24H. When clock setting mode, the value increases.
85	89	−/12H	Clock display change to 12H. When clock setting mode, the value decreases.
88	90	CLOCK/ENTER	Tape playing mode : Clock set. Radio mode : Memory the frequency.
87	90	TIMER	Not used.
86	90	HEAD	PLAY switch input.
85	90	N/R	FWD/REV direction change input.
88	91	HOLDER	Cassette holder open/close switch input.
87	91	BATT	Low battery detection input.
86	91	NT	Not used.
85	91	RT	Not used.
88	92	HOLD	HOLD SW input
87	92	REEL	Reel rotation detection input.
86	92	MODE	DIRECTION MODE switch input.
85	92	RADIO ON	Radio ON input.

4-3. BLOCK DIAGRAM

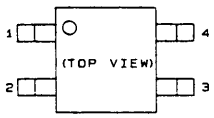


4-4. SEMICONDUCTOR LEAD LAYOUTS

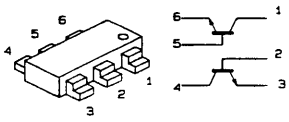
XN4401



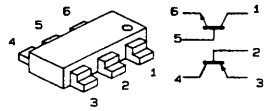
PST611X



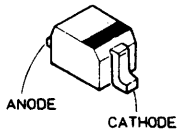
XN4210



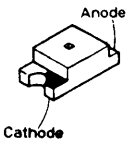
XN4315
XN4608



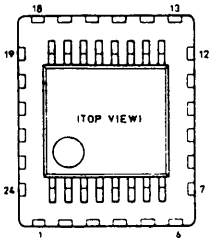
MA110
MA729



CL70G-CD



MHC8570E001
MHC8570DB001R



4-5. SEMICONDUCTOR LOCATION

Reference No.	Location	Reference No.	Location
D601	D-3	Q406	I-19
D602	E-1	Q407	J-19
D703	C-9	Q408	J-18
D801	I-16	Q601	E-2
D802	I-16	Q602	E-2
D803	J-15	Q603	E-3
D804	J-16	Q604	E-2
		Q605	F-3
IC301	H-18	Q606	E-3
IC302	G-15	Q703	B-5
IC303	E-16	Q704	C-5
IC304	B-21	Q705	F-5
IC601	G-2	Q706	F-6
IC701	G-5	Q707	F-5
IC703	C-6	Q708	F-6
IC704	G-6	Q709	E-6
IC705	B-7	Q710	E-6
IC706	D-6	Q711	E-5
		Q712	E-5
PH801	G-19	Q713	D-5
		Q714	D-6
Q301	G-17	Q715	D-4
Q302	H-17	Q716	D-5
Q303	E-15	Q720	H-7
Q304	B-16	Q721	H-6
Q305	B-20	Q722	C-7
Q306	G-18	Q801	J-17
Q307	H-15	Q802	I-16
Q308	C-17	Q803	I-17
Q309	B-15	Q804	J-17
Q310	G-18	Q805	H-19
Q402	G-20		
Q405	I-19		

4-6. PRINTED WIRING BOARDS

— See page 12 for Semiconductor Location —

【SWITCH BOARD】

【SW.C FLEXIBLE BOARD】

【SC FLEXIBLE BOARD】

【CONTROL BOARD】

【MC FLEXIBLE BOARD】

【PL FLEXIBLE BOARD】

【SERVO BOARD】

【MOTOR FLEXIBLE BOARD】

【MAIN BOARD】

【HEAD FLEXIBLE BOARD】

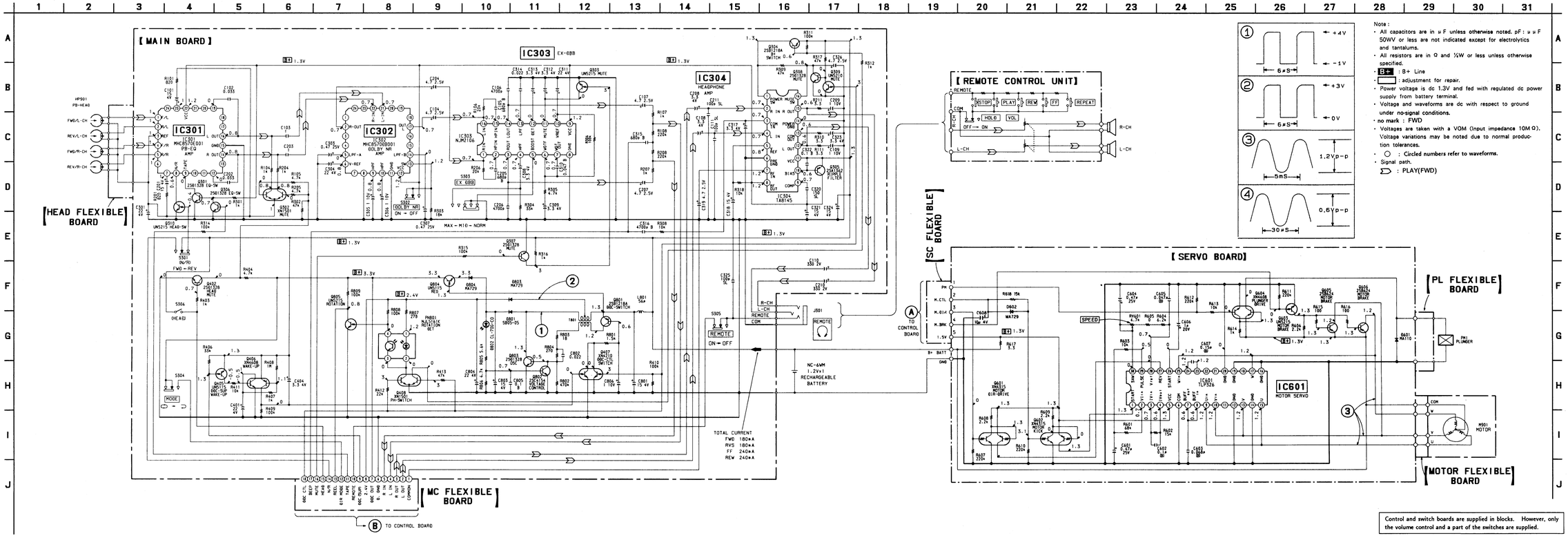
SC FLEXIBLE BOARD
CONTROL BOARD SIDE B
SERVO BOARD
MD ASS'Y
CONTROL BOARD SIDE A
MAIN BOARD
MC FLEXIBLE BOARD
SW.C FLEXIBLE BOARD
SWITCH BOARD
HEAD FLEXIBLE BOARD
HP90 PB HEAD

Control and switch boards are supplied in blocks. However, only the volume control and a part of the switches are supplied.

Note :

- ■ : parts mounted on the conductor side.
- ● : Through hole.
- : Pattern on the side which is seen.
- : Pattern of the rear side.

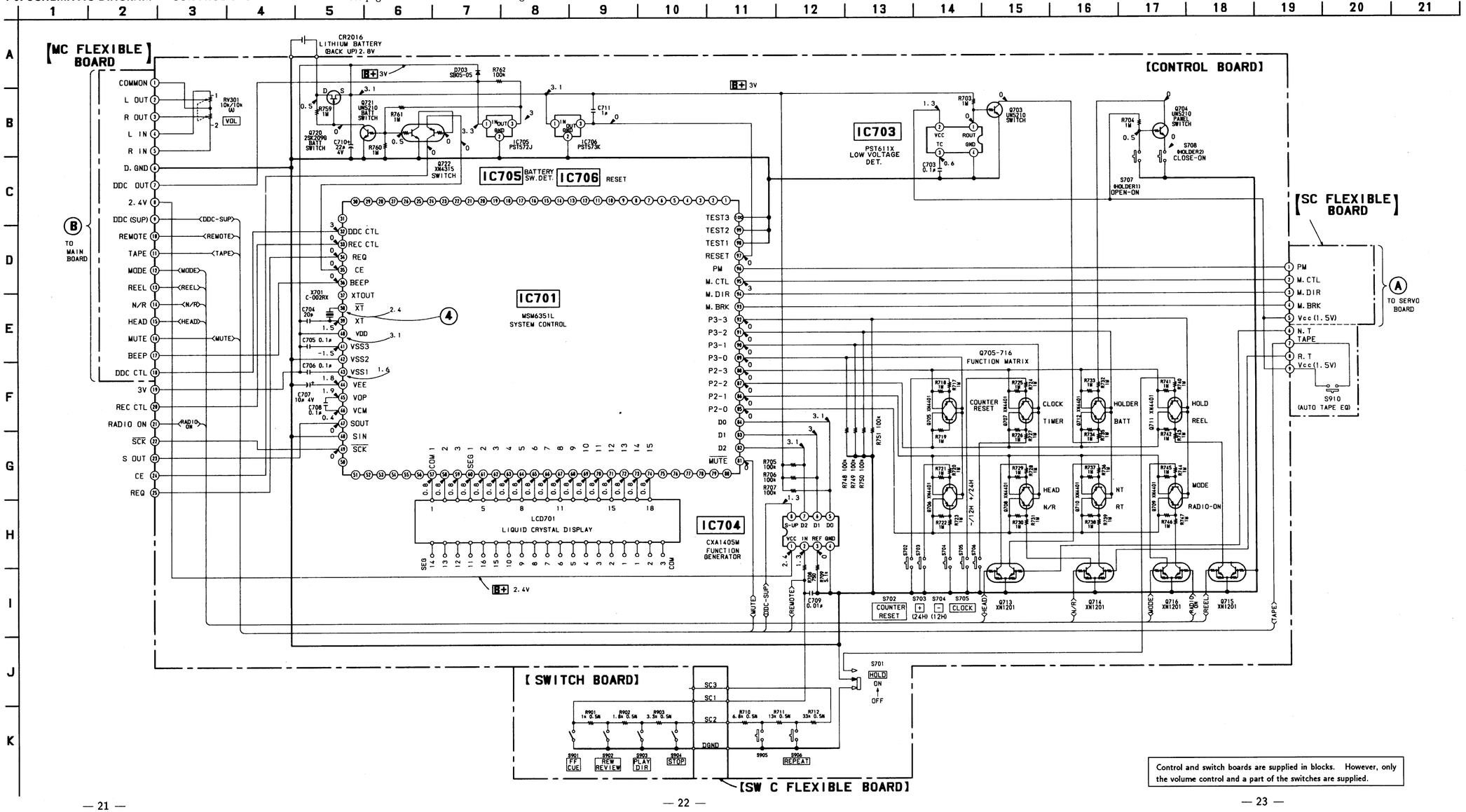
4-7. SCHEMATIC DIAGRAM — MAIN SECTION —



Control and switch boards are supplied in blocks. However, only the volume control and a part of the switches are supplied.

4-8. SCHEMATIC DIAGRAM — CONTROL SECTION —

— See page 20 for Notes for Schematic Diagram —



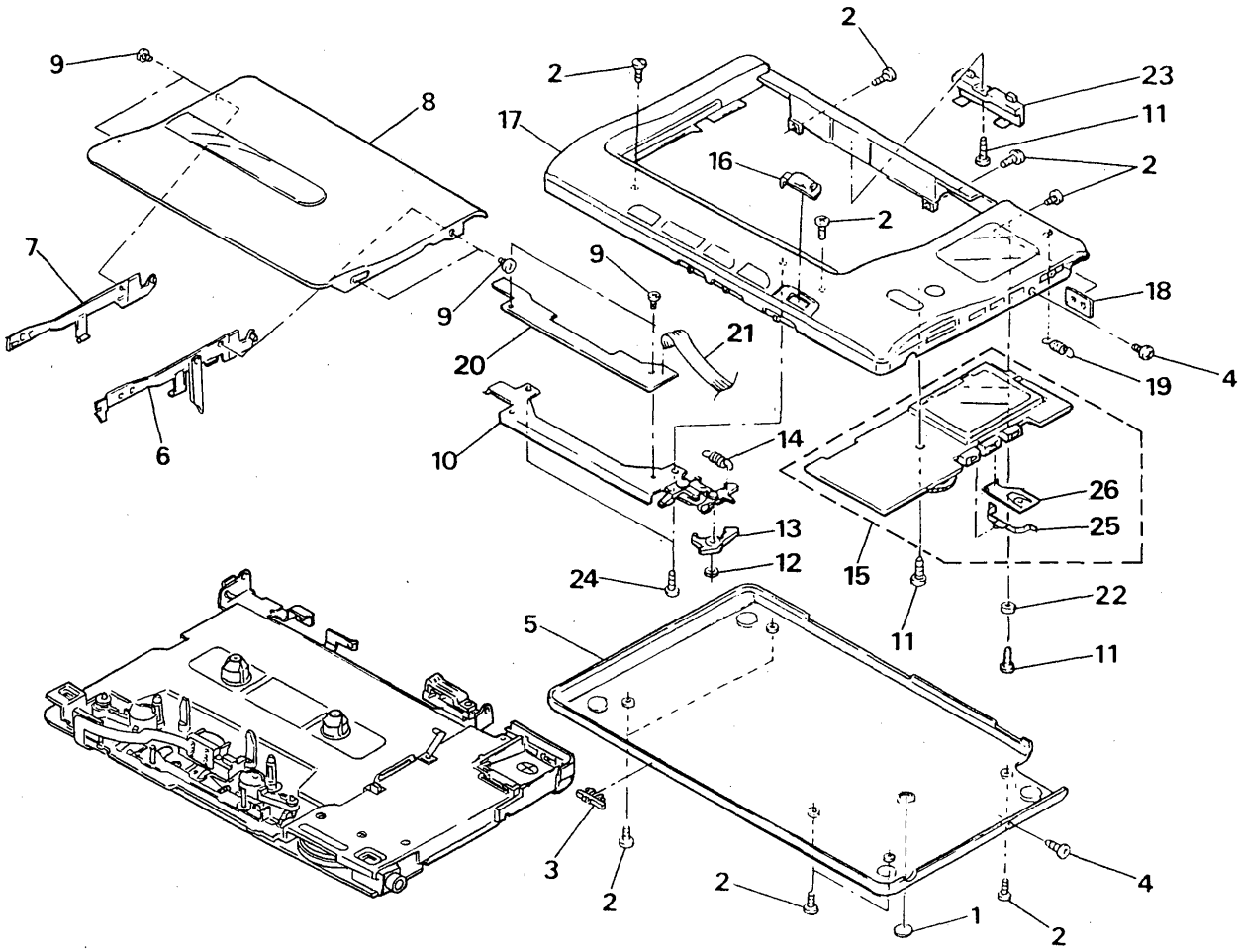
Control and switch boards are supplied in blocks. However, only the volume control and a part of the switches are supplied.

SECTION 5
EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
  Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ Cabinet's Color
  ↑ Parts Color

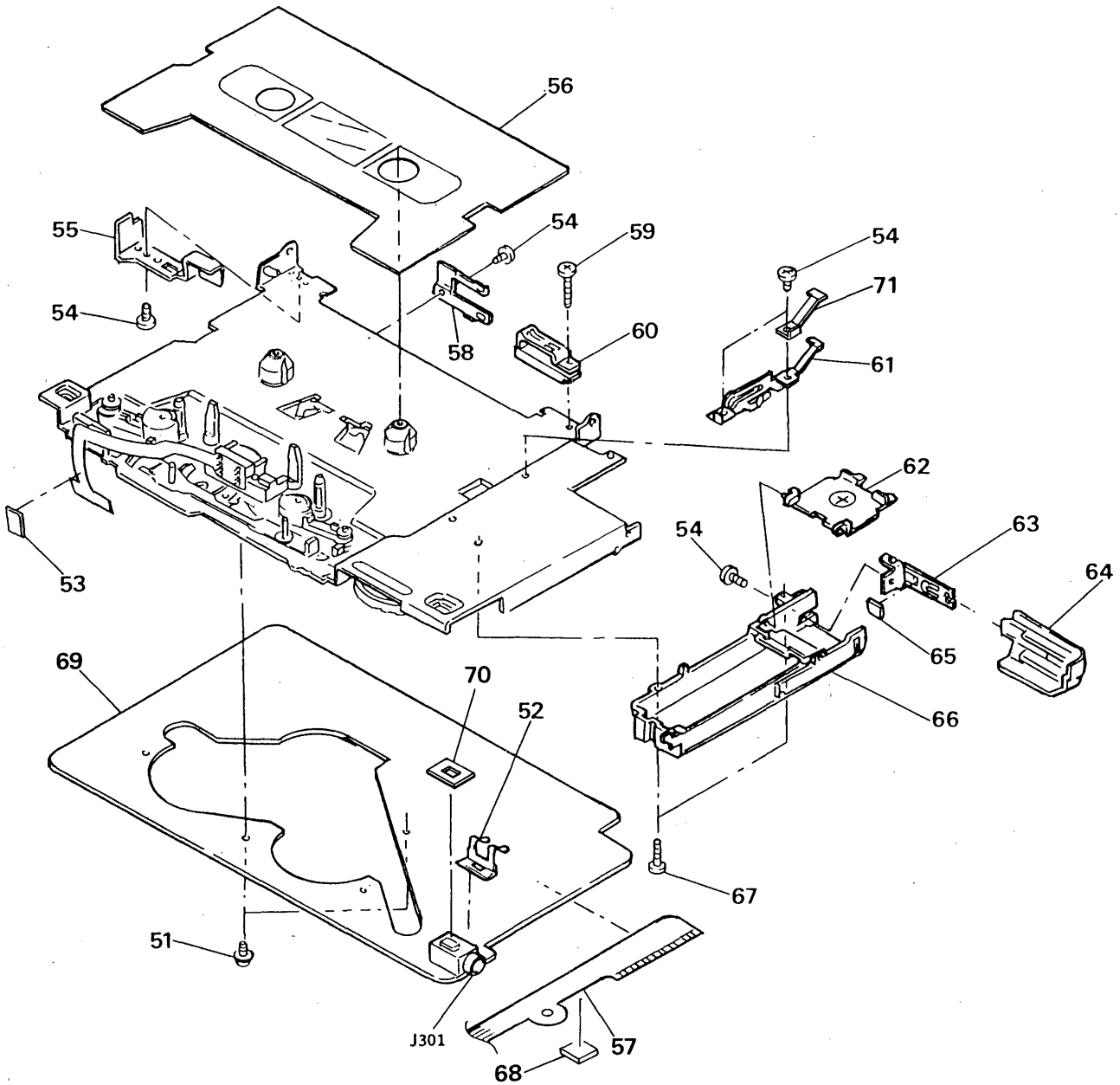
(1) MAIN - 1



Ref.No	Part No.	Description	Remark
1	3-342-380-01	SHEET, SPEED HOLE	
2	3-704-197-22	SCREW (M1.4×2.5), LOCKING	
3	3-364-005-01	KNOB (REMOTE)	
4	3-704-197-32	SCREW (M1.4×3.0)	
5	X-3362-273-1	CASE ASSY(DARK GRAY)	
6	X-3362-266-1	BRACKET (A) ASSY	
7	X-3362-267-1	BRACKET (B) ASSY	
8	X-3362-972-1	LID ASSY, CASSETTE (DARK GRAY)	
9	3-704-197-02	SCREW (M1.4×1.6), LOCKING	
10	X-3362-269-1	BRACKET (SW) ASSY	
11	3-893-942-31	SCREW (M1.7×4), TAPPING (B)	
12	3-578-224-00	WASHER	
13	3-363-995-01	LEVER, SW	
14	3-363-983-01	SPRING, TENSION	
15	1-466-399-11	CONTROL UNIT	including 25,26

Ref.No	Part No.	Description	Remark
16	3-363-968-01	KNOB(OPEN)	
17	X-3362-973-1	CABINET(FRONT) ASSY (DARK GRAY)	
18	3-363-994-01	BRACKET (D)	
19	3-561-633-00	SPRING, TENSION	
20	1-572-466-11	SWITCH (BLOCK TYPE)	
21	1-636-097-11	SW.C FLEXIBLE BOARD	
22	3-363-993-01	COLLER	
23	1-537-317-11	TERMINAL BOARD (BATTERY CASE)	
24	3-355-424-01	SCREW, TAPPPING	
25	3-363-987-01	TERMINAL BOARD (D) BATTERY	
26	3-363-988-01	TERMINAL BOARD (E) BATTERY	

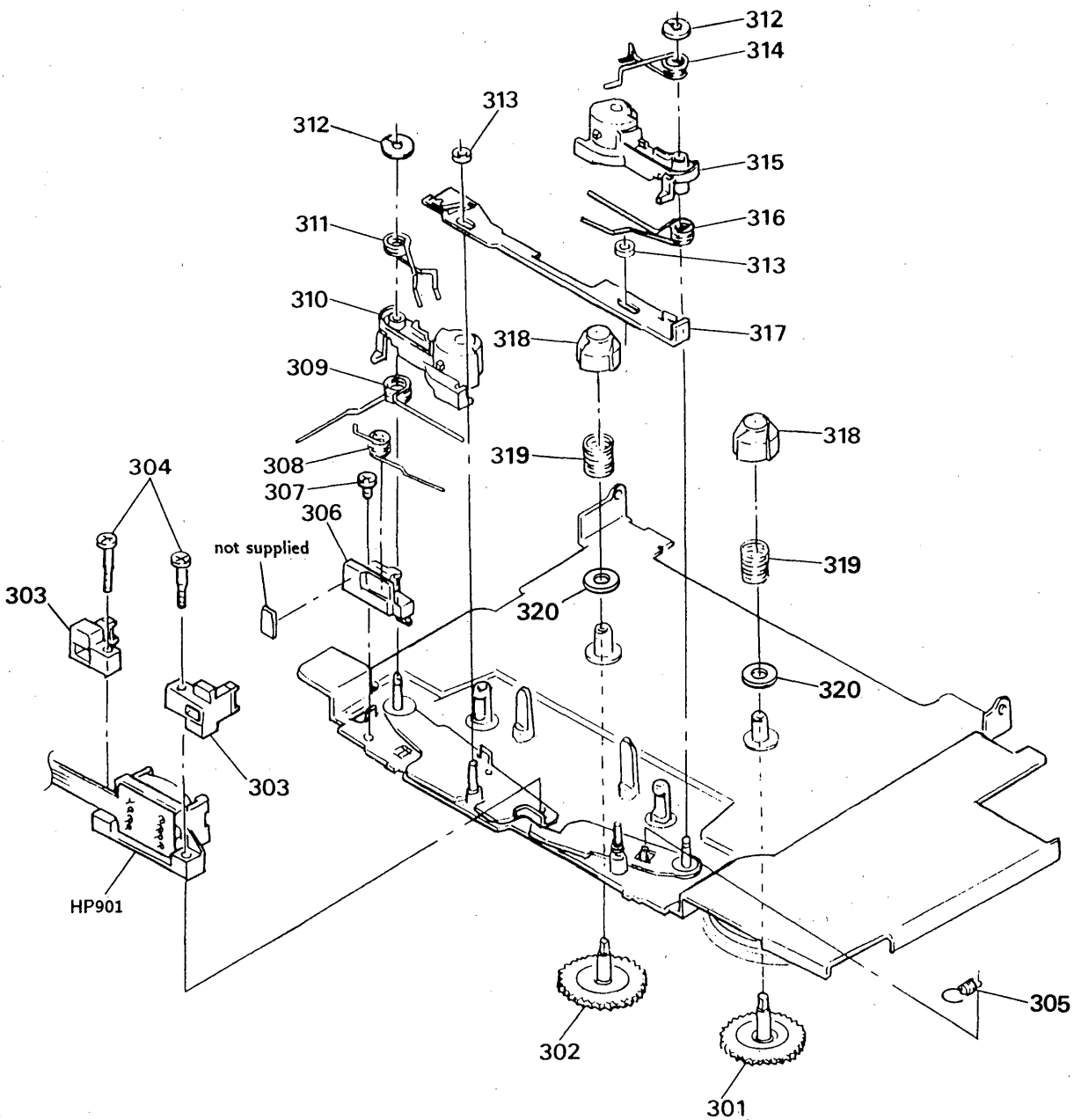
(2) MAIN - 2



Ref.No	Part No.	Description	Remark
51	3-703-502-11	SCREW	
52	3-363-986-01	TERMINAL BOARD (C), BATTERY	
53	3-831-441-11	CUSHION (B)	
54	3-704-197-01	SCREW (M1.4×1.6), LOCKING	
55	3-364-002-01	BRACKET (C)	
56	3-364-107-01	COVER, MD	
57	1-636-096-11	M.C FLEXIBLE BOARD	
58	3-361-211-01	SPRING, CASSETTE RETAINER	
59	3-703-816-81	SCREW (M1.4×6.0), SPECIAL HEAD	
60	3-364-003-01	BRACKET (R), G	

Ref.No	Part No.	Description	Remark
61	3-364-004-01	ARM (B), CLICK	
62	3-364-006-01	LID (LITIUM), BATTERY CASE	
63	X-3362-268-1	TERMINAL BOARD ASSY, BATTERY	
64	3-364-007-01	LID, BATTERY CASE	
65	*9-911-838-XX	CUSHION	
66	3-364-010-01	HOLDER, BATTERY	
67	3-704-197-22	SCREW (M1.4×2.5), LOCKING	
68	3-703-929-01	CUSHION (G)	
69	A-3015-920-A	MAIN BOARD, COMPLETE	
70	*X-3362-716-1	BRACKET (JACK) ASSY	
71	3-364-998-01	SPRING,POP UP	
J301	1-580-175-11	JACK (REMOTE/PHONES)	

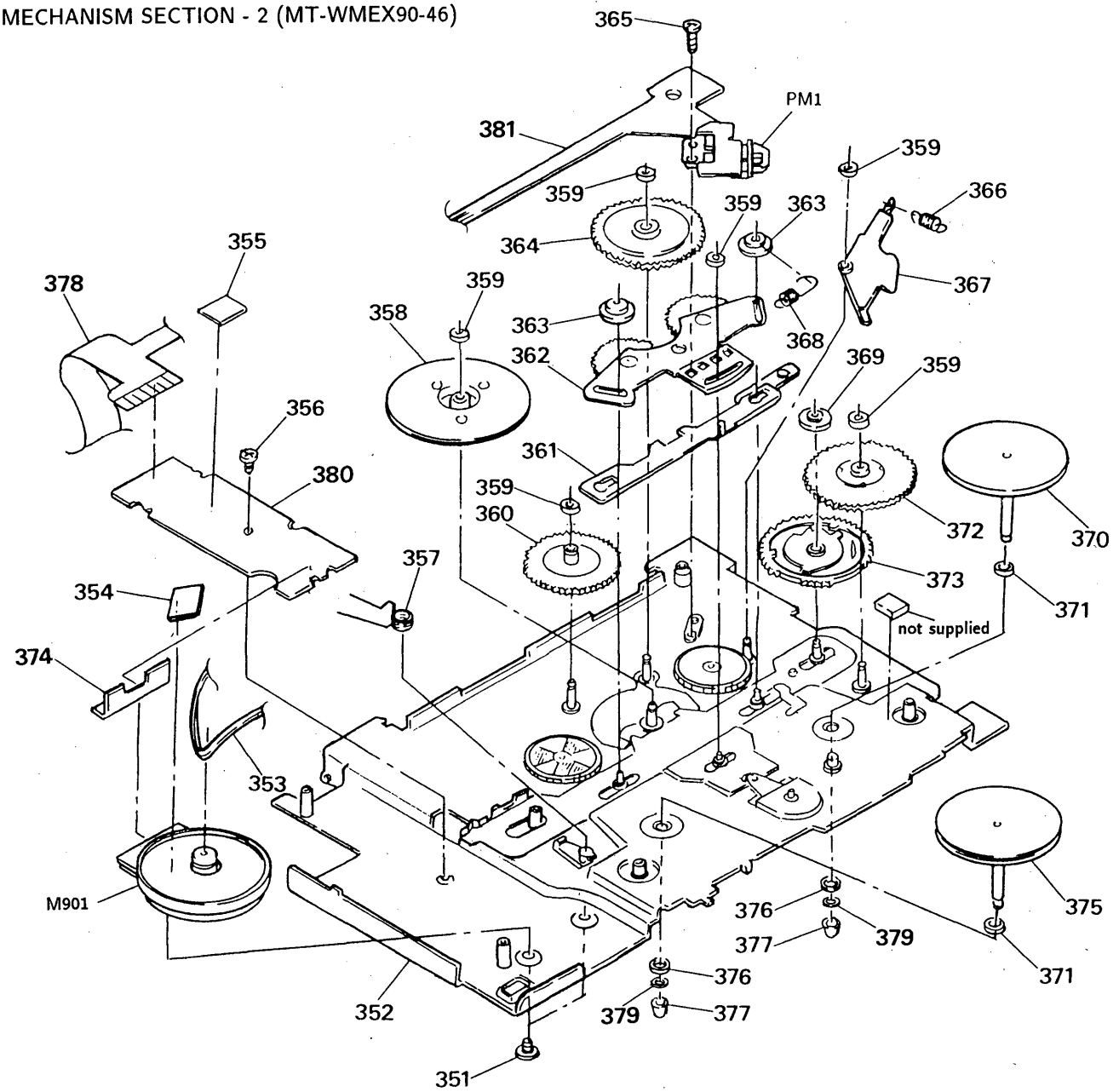
(3) MECHANISM SECTION - 1 (MT-WMEX90-46)



Ref.No	Part No.	Description	Remark
301	X-3362-775-1	GEAR (REEL) ASSY	
302	3-361-236-01	GEAR (REEL)	
303	3-362-996-01	GUIDE, TAPE	
304	3-363-005-01	SCREW (M1.4)	
305	3-366-250-01	SPRING, TENSION	
306	3-361-217-01	GUIDE, FLEXIBLE	
307	3-345-648-01	SCREW (M1.4×3.0), TOOTHED LOCK	
308	3-363-002-01	SPRING (HEAD), TORSION	
309	3-362-999-01	SPRING (R), TORSION	
310	X-3361-206-1	PINCH LEVER (R) ASSY	

Ref.No	Part No.	Description	Remark
311	3-363-004-01	SPRING (PINCH), TORSION	
312	3-348-953-11	WASHER	
313	3-331-007-21	WASHER	
314	3-363-001-01	SPRING (LOCK), TORSION	
315	X-3361-205-1	PINCH LEVER (N) ASSY	
316	3-362-998-01	SPRING (N), TORSION	
317	3-361-225-01	LEVER, LOCK	
318	3-365-801-01	TABLE, REEL	
319	3-366-253-01	SPRING, COMPRESSION	
320	3-365-356-01	WASHER	
HP901	1-543-760-11	HEAD, MAGNETIC (PLAYBACK)	

(4) MECHANISM SECTION - 2 (MT-WMEX90-46)



Ref.No	Part No.	Description	Remark
351	3-354-448-01	SCREW (TOOTH)	
352	X-3361-210-1	CHASSIS ASSY	
353	3-361-204-11	BELT	
354	3-831-441-XX	SPACER, KNOB	
355	3-831-44-1-11	CUSHION B	
356	3-703-816-31	SCREW (M1.4×1.6), SPECIAL HEAD	
357	3-363-003-01	SPRING (NR), TORSION	
358	3-361-201-01	PULLEY (MIDWAY)	
359	3-361-258-01	BUSHING (A)	
361	3-361-221-01	LEVER (B), FR	
362	X-3362-776-1	LEVER ASSY, FR	
363	3-362-997-01	BUSHING (FR)	
364	X-3361-202-1	CLUTCH ASSY	
365	3-361-216-71	SCREW (M1.4×2.8)	
366	3-366-251-01	SPRING, TENSION	
367	3-361-223-01	LEVER, TRIGGER	

Ref.No	Part No.	Description	Remark
368	3-366-252-01	SPRING, TENSION	
369	3-366-019-01	BUSHING (CAM GEAR)	
370	X-3362-615-1	WHEEL (R) ASSY, CAPSTAN	
371	3-361-209-01	WASHER	
372	3-361-230-01	GEAR (K)	
373	3-361-219-01	GEAR, CAM	
374	1-636-787-11	MOTOR FLEXIBLE BOARD	
375	X-3362-616-1	WHEEL (N) ASSY, CAPSTAN	
376	3-366-249-01	WASHER	
377	3-366-017-01	BUSHING (CAPSTAN)	
378	1-636-095-11	S.C FLEXIBLE BOARD	
379	3-367-457-01	WASHER	
380	A-3065-087-A	MOUNTED PCB, SERVO	
381	1-637-835-11	PLUNGER FLEXIBLE BOARD	
M901	1-541-853-11	MOTOR	
PM1	1-454-523-11	SOLENOID, PLUNGER	

CONTROL MAIN

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA..., UPC...: μPC, UPD...: μPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
		CONTROL BOARD	
		**********	
	1-466-399-11	CONTROL UNIT	
	1-636-095-11	S.C FLEXIBLE BOARD	
	1-636-096-11	M.C FLEXIBLE BOARD	
	3-703-929-01	CUSHION (G)	
		< IC >	
IC704	8-752-051-56	IC CXA1405AM	
		< VARIABLE RESISTOR >	
RV301	1-241-215-11	RES, ADJ, CARBON 10K/10K	
		< SWITCH >	
S701	1-571-275-31	SWITCH, SLIDE (HOLD)	
S702	1-571-533-31	SWITCH, KEY BOARD (COUNTER RESET)	
S703	1-570-204-21	SWITCH, KEY BOARD (+)	
S704	1-570-204-21	SWITCH, KEY BOARD (−)	
S705	1-570-204-21	SWITCH, KEY BOARD (CLOCK)	
S706	1-571-533-31	SWITCH, KEY BOARD	
S707	1-572-467-11	SWITCH, PUSH (1 KEY) (HOLDER 1)	
S708	1-572-467-11	SWITCH, PUSH (1 KEY) (HOLDER 2)	
S905	1-571-533-31	SWITCH, KEY BOARD	
S906	1-571-533-31	SWITCH, KEY BOARD (REPEAT)	
**********			
	A-3015-920-A	MAIN BOARD, COMPLETE	
		**********	
	3-363-986-01	TERMINAL BOARD (C), BATTERY	
		< CAPACITOR >	
C101	1-135-158-21	TANTAL CHIP 15MF 20%	4V
C102	1-163-989-11	CERAMIC CHIP 0.033MF 10%	25V
C103	1-164-346-11	CERAMIC CHIP 1MF	16V
C104	1-135-218-11	TANTAL CHIP 4.7MF 20%	2.5V
C105	1-162-963-11	CERAMIC CHIP 680PF 10%	50V
C106	1-162-968-11	CERAMIC CHIP 0.0047MF	50V
C107	1-135-218-11	TANTAL CHIP 4.7MF 20%	2.5V
C108	1-135-221-11	TANTAL CHIP 3.3MF 20%	4V
C109	1-135-208-11	TANTAL CHIP 1MF 20%	10V
C110	1-126-236-11	ELECT 330MF 20%	2V
C111	1-162-953-11	CERAMIC FHIP 100PF 5%	50V
C201	1-135-158-21	TANTAL CHIP 15MF 20%	4V
C202	1-163-989-11	CERAMIC CHIP 0.0033MF 10%	25V
C203	1-164-346-11	CERAMIC CHIP 1MF	16V
C204	1-135-218-11	TANTAL CHIP 4.7MF 20%	2.5V
C205	1-162-963-11	CERAMIC CHIP 680PF 10%	50V
C206	1-162-968-11	CERAMIC CHIP 0.0047MF	50V
C207	1-135-218-11	TANTAL CHIP 4.7MF 20%	2.5V
C208	1-135-221-11	TANTAL CHIP 3.3MF 20%	4V
C209	1-135-208-11	TANTAL CHIP 1MF 20%	10V
C210	1-126-236-11	ELECT 330MF 20%	2V
C211	1-162-953-11	CERAMIC CHIP 100PF 5%	50V
C301	1-135-202-21	TANTAL CHIP 22MF 20%	4V
C303	1-135-145-11	TANTAL CHIP 0.47MF 20%	25V
C304	1-135-202-21	TANTAL CHIP 22MF 20%	4V
C305	1-135-208-11	TANTAL CHIP 1MF 20%	10V
C306	1-135-208-11	TANTAL CHIP 1MF 20%	10V
C307	1-135-145-11	TANTAL CHIP 0.47MF 20%	25V
C308	1-135-221-11	TANTAL CHIP 3.3MF 20%	4V
C309	1-135-221-11	TANTAL CHIP 3.3MF 20%	4V
C310	1-163-809-11	CERAMIC CHIP 0.047MF 10%	25V
C311	1-135-131-11	TANTAL CHIP 22MF 20%	4V
C312	1-135-221-11	TANTAL CHIP 3.3MF 20%	4V
C313	1-135-221-11	TANTAL CHIP 3.3MF 20%	4V
C314	1-162-995-11	CERAMIC CHIP 0.022MF 50V	
C315	1-162-963-11	CERAMIC CHIP 680PF 10%	50V
C316	1-163-017-00	CERAMIC CHIP 0.0047MF 10%	50V
C317	1-135-221-11	TANTAL CHIP 3.3MF 20%	4V
C318	1-135-158-21	TANTAL CHIP 15MF 20%	4V
C319	1-135-218-11	TANTAL CHIP 4.7MF 20%	2.5V
C320	1-162-955-11	CERAMIC CHIP 150PF 5%	50V
C321	1-135-158-21	TANTAL CHIP 15MF 20%	4V
C322	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C323	1-135-221-11	TANTAL CHIP 3.3MF 20%	4V
C324	1-135-158-21	TANTAL CHIP 15MF 20%	4V
C325	1-162-953-11	CERAMIC CHIP 100PF 5%	50V
C326	1-135-218-11	TANTAL CHIP 4.7MF 20%	2.5V
C401	1-135-202-21	TANTAL CHIP 22MF 20%	4V
C404	1-135-221-11	TANTAL CHIP 3.3MF 20%	4V
C801	1-135-158-21	TANTAL CHIP 15MF 20%	4V
C802	1-163-037-11	CERAMIC CHIP 0.022MF 10%	25V
C803	1-135-158-21	TANTAL CHIP 15MF 20%	4V
C804	1-135-202-21	TANTAL CHIP 22MF 20%	4V
C805	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C806	1-135-208-11	TANTAL CHIP 1MF 20%	10V
		< DIODE >	
D801	8-719-938-75	DIODE SB05-05CP	
D802	8-719-975-06	DIODE CL-70G-CD(LED)	
D803	8-719-420-51	DIODE MA729	
D804	8-719-420-51	DIODE MA729	
		< IC >	
IC301	8-749-920-28	IC MHC8570EQ01L	
IC302	8-749-922-11	IC MHC8570DB001R	
IC303	8-759-512-77	IC RC2106M	
IC304	8-759-231-13	IC TA8145FN	

Control and switch boards are supplied in blocks. However, only the volume control and a part of the switches are supplied.

MAIN SERVO

Ref.No	Part No.	Description			Remark
		< JACK >			
J301	1-580-175-11	JACK			
		< JUMPER >			
JW101	1-216-295-00	METAL GLAZE 0	5%	1/10W	
JW201	1-216-295-00	METAL GLAZE 0	5%	1/10W	
JW301	1-216-295-00	METAL GLAZE 0	5%	1/10W	
JW302	1-216-295-00	METAL GLAZE 0	5%	1/10W	
JW401	1-216-295-00	METAL GLAZE 0	5%	1/10W	
JW402	1-216-295-00	METAL GLAZE 0	5%	1/10W	
		< INDUCTOR >			
L801	1-412-148-11	INDUCTOR CHIP 560H			
		< PHOTO DIODE >			
PH801	8-759-710-35	DIODE, PHOTO NJL5161K-B			
		< TRANSISTOR >			
Q301	8-749-420-55	TRANSISTOR 2SD1328-S			
Q302	8-729-421-23	TRANSISTOR XN1216			
Q303	8-729-420-50	TRANSISTOR UN5215			
Q304	8-729-905-23	TRANSISTOR 2SA1576			
Q305	8-729-230-72	TRANSISTOR 2SA1362YG			
Q306	8-749-420-55	TRANSISTOR 2SD1328-S			
Q307	8-749-420-55	TRANSISTOR 2SD1328-S			
Q308	8-749-420-55	TRANSISTOR 2SD1328-S			
Q309	8-729-420-44	TRANSISTOR UN5210			
Q310	8-729-420-50	TRANSISTOR UN5215			
Q402	8-749-420-55	TRANSISTOR 2SD1328-S			
Q405	8-729-420-53	TRANSISTOR UN5115			
Q406	8-729-402-16	TRANSISTOR XN4608			
Q407	8-729-403-26	TRANSISTOR XN4210			
Q408	8-729-421-23	TRANSISTOR XN1216			
Q801	8-729-905-23	TRANSISTOR 2SA1576			
Q802	8-729-602-21	TRANSISTOR 2SC4154			
Q803	8-729-400-56	TRANSISTOR 2SD1328-T			
Q804	8-729-420-53	TRANSISTOR UN5115			
Q805	8-729-420-50	TRANSISTOR UN5215			
		< RESISTOR >			
R101	1-216-047-00	METAL GLAZE 820	5%	1/10W	
R104	1-216-049-00	METAL GLAZE 1K	5%	1/10W	
R105	1-216-829-11	METAL GLAZE 4.7K	5%	1/16W	
R106	1-218-292-11	METAL GLAZE 20K	5%	1/16W	
R107	1-216-821-11	METAL GLAZE 1K	5%	1/16W	
R108	1-216-849-11	METAL GLAZE 220K	5%	1/16W	
R111	1-216-304-11	METAL GLAZE 3.3	5%	1/10W	
R201	1-216-047-00	METAL GLAZE 820	5%	1/10W	
R204	1-216-049-00	METAL GLAZE 1K	5%	1/10W	
R205	1-216-829-11	METAL GLAZE 4.7K	5%	1/16W	
R206	1-218-292-11	METAL GLAZE 20K	5%	1/16W	
R207	1-216-821-11	METAL GLAZE 1K	5%	1/16W	
R208	1-216-849-11	METAL GLAZE 220K	5%	1/16W	
R211	1-216-304-11	METAL GLAZE 3.3	5%	1/10W	
R301	1-216-049-00	METAL GLAZE 1K	5%	1/10W	
R302	1-216-841-11	METAL GLAZE 47K	5%	1/16W	
R303	1-216-836-11	METAL GLAZE 18K	5%	1/16W	
R304	1-216-839-11	METAL GLAZE 33K	5%	1/16W	
R305	1-216-829-11	METAL GLAZE 4.7K	5%	1/16W	
R306	1-216-845-11	METAL GLAZE 100K	5%	1/16W	
R308	1-216-073-00	METAL GLAZE 10K	5%	1/10W	
R309	1-216-841-11	METAL GLAZE 47K	5%	1/16W	
R310	1-216-304-11	METAL GLAZE 3.3	5%	1/10W	
R311	1-216-845-11	METAL GLAZE 100K	5%	1/16W	
R312	1-216-049-00	METAL GLAZE 1K	5%	1/10W	
R314	1-216-833-11	METAL GLAZE 10K	5%	1/16W	
R315	1-216-845-11	METAL GLAZE 100K	5%	1/16W	
R316	1-216-821-11	METAL GLAZE 1K	5%	1/16W	
R317	1-216-841-11	METAL GLAZE 47K	5%	1/16W	
R318	1-216-073-00	METAL GLAZE 10K	5%	1/10W	
R403	1-216-049-00	METAL GLAZE 1K	5%	1/10W	
R404	1-216-829-11	METAL GLAZE 4.7K	5%	1/16W	
R406	1-216-839-11	METAL GLAZE 33K	5%	1/16W	
R407	1-216-049-00	METAL GLAZE 1K	5%	1/10W	
R408	1-216-857-11	METAL GLAZE 1M	5%	1/16W	
R409	1-216-845-11	METAL GLAZE 100K	5%	1/16W	
R410	1-216-845-11	METAL GLAZE 100K	5%	1/16W	
R411	1-216-833-11	METAL GLAZE 10K	5%	1/16W	
R412	1-216-837-11	METAL GLAZE 22K	5%	1/16W	
R413	1-216-841-11	METAL GLAZE 47K	5%	1/16W	
R801	1-216-053-00	METAL GLAZE 1.5K	5%	1/10W	
R802	1-216-853-11	METAL GLAZE 470K	5%	1/16W	
R803	1-216-800-11	METAL GLAZE 18	5%	1/16W	
R804	1-216-814-11	METAL GLAZE 270	5%	1/16W	
R805	1-216-830-11	METAL GLAZE 5.6K	5%	1/16W	
R806	1-216-829-11	METAL GLAZE 4.7K	5%	1/16W	
R807	1-216-035-00	METAL GLAZE 270	5%	1/10W	
R808	1-216-845-00	METAL GLAZE 100K	5%	1/16W	
R809	1-216-845-11	METAL GLAZE 100K	5%	1/16W	
		< SWITCH >			
S301	1-571-584-31	SWITCH, SLIDE (FWD/REV)			
S302	1-571-275-31	SWITCH, SLIDE (DOLBY NR)			
S303	1-571-506-41	SWITCH, SLIDE (EX DBB)			
S304	1-571-275-31	SWITCH, SLIDE (MODE ⬭→⮌)			
S305	1-571-275-31	SWITCH, SLIDE (REMOTE)			
S306	1-572-457-11	SWITCH, PUSH(1 KEY)(HEAD)			
		< TRANSFORMER >			
T801	1-449-543-11	TRANSFORMER, DC-DC CONVERTER			

****

A-3016-017-A	SERVO BOARD, COMPLETE			
	**********			
1-636-787-11	MOTOR FLEXIBLE BOARD			
	< CAPACITOR >			
C601	1-135-145-11	TANTAL CHIP 0.47MF	10%	25V
C602	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C603	1-163-833-00	CERAMIC CHIP 0.068MF	10%	25V
C604	1-135-145-11	TANTAL CHIP 0.47MF	10%	25V
C605	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C606	1-135-177-21	TANTAL CHIP 1MF	10%	20V
C607	1-164-492-11	CERAMIC CHIP 0.15MF	10%	16V
C608	1-135-201-11	TANTAL CHIP 10MF	20%	6.3V
	< DIODE >			
D601	8-719-404-46	DIODE MA110		
D602	8-719-420-51	DIODE MA729		
	< IC >			
IC601	8-759-996-13	IC TLP326ADB		

When indicating parts by reference number, please include the board name.

Control and switch boards are supplied in blocks. However, only the volume control and a part of the switches are supplied.

SERVO SW

Ref.No	Part No.	Description		Remark
		< TRANSISTOR >		
Q601	8-729-422-18	TRANSISTOR XN4315		
Q602	8-729-422-18	TRANSISTOR XN4315		
Q603	8-729-420-50	TRANSISTOR UN5215		
Q604	8-729-402-16	TRANSISTOR XN4608		
Q605	8-729-141-48	TRANSISTOR 2SB624-BV345		
Q606	8-729-141-48	TRANSISTOR 2SB624-BV345		
		< RESISTOR >		
R601	1-216-843-11	METAL GLAZE 68K	5%	1/16W
R602	1-216-835-11	METAL GLAZE 15K	5%	1/16W
R603	1-216-833-11	METAL GLAZE 10K	5%	1/16W
R604	1-218-290-11	METAL GLAZE 6.2K	5%	1/16W
R605	1-216-295-00	METAL GLAZE 0	5%	1/10W
R606	1-216-825-11	METAL GLAZE 2.2K	5%	1/16W
R607	1-216-849-11	METAL GLAZE 220K	5%	1/16W
R608	1-216-825-11	METAL GLAZE 2.2K	5%	1/16W
R609	1-216-825-11	METAL GLAZE 2.2K	5%	1/16W
R610	1-216-849-11	METAL GLAZE 220K	5%	1/16W
R611	1-216-849-11	METAL GLAZE 220K	5%	1/16W
R612	1-216-849-11	METAL GLAZE 220K	5%	1/16W
R613	1-216-845-11	METAL GLAZE 100K	5%	1/16W
R614	1-216-821-11	METAL GLAZE 1K	5%	1/16W
R615	1-216-809-11	METAL GLAZE 100	5%	1/16W
R616	1-216-809-11	METAL GLAZE 100	5%	1/16W
R617	1-216-791-11	METAL GLAZE 3.3	5%	1/16W
R618	1-216-835-11	METAL GLAZE 15K	5%	1/16W
		< VARIABLE RESISTOR >		
RV601	1-241-223-11	RES, ADJ, METAL GRAZE 4.7K		

****

SW BOARD
****

	1-572-466-11	SWITCH(BLOCK TYPE)
	1-636-097-11	SW.C FLEXIBLE BOARD
	3-363-983-01	SPRING, TENSION
	3-363-995-01	LEVER,SW
	3-357-224-00	WASHER
	3-704-197-01	SCREW(M1.4×1.6),LOCKING

Ref.No	Part No.	Description	Remark
		**********	
		MISCELLANEOUS **********	
23	1-537-317-11	TERMINAL BOARD (BATTERY CASE)	
HP901	1-543-760-11	HEAD,MAGNETIC (PLAYBACK)	
M901	1-541-853-11	MOTOR	
PM901	1-454-523-11	SOLENOID,PLUNGER	
		**********	
		ACCESSORIES AND PACKING MATERIAL **********	
	1-505-119-11	HEADPONE(WITH REMOCON) (NUDE TYPE) (AEP,E)	
	1-505-127-11	HEADPHONE (WITH REMOCON) (EAR-PAD TYPE) (AEP)	
⚠	1-526-565-00	AC PLUG ADAPTOR (E)	
	1-528-231-11	BATTERY,NICKEL CADMIUM(NC-6WM)	
⚠	1-528-327-11	CHARGER,BATTERY(BC-7BY) (AEP)	
⚠	1-528-338-11	BATTERY CHARGER (BC-7BT) (E)	
⚠	1-550-626-11	CASE,BATTERY	
	3-364-999-01	CASE,CARRYING	
*	3-366-376-01	INDIVIDUAL CARTON	
*	3-366-377-01	CUSHION(UPPER)	
*	3-370-126-01	CUSHION(LOWER)	
	3-752-743-11	MANUAL,INSTRUCTION (English, French, Spanish, Portuguese)	
	3-752-743-51	MANUAL,INSTRUCTION (German, Dutch, Swedish, Italian) (AEP)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Control and switch boards are supplied in blocks. However, only the volume control and a part of the switches are supplied.

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General Audio Group

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WM-EX90

SONY
SERVICE MANUAL

AEP Model
E Model

CORRECTION-1

Correct your service manual as shown below.

☛ : **indicates corrected portion.**

Page	INCORRECT			CORRECT	
	No.	Part No.	Description	Part No.	Description
29	S301	1-571-584-31	SWITCH, SLIDE (FWD/REV)	1-571-584-31	SWITCH, SLIDE (N/R) ☛
	S306	1-572-457-11	SWITCH, PUSH (1 KEY) (HEAD)	1-572-467-11 ☛	SWITCH, PUSH (1 KEY) (HEAD)
	S910	———	———	1-572-467-11 ☛	SWITCH, PUSH (1 KEY) (TAPE EQ)
		A-3016-017-A	SERVO BOARD, COMPLETE	A-3065-087-A ☛	MOUNTED PCB, SERVO

9-956-160-91

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General Audio Group

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WM-EX90

SONY

SERVICE MANUAL

AEP Model
E model

CORRECTION-2

Correct your service manual as shown below.

____ (Under line) : indicates corrected portion.

Page	INCORRECT			CORRECT		
	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
27	355	3-831-44-1-11	CUSHION B	355	3-831-441-11	CUSHION B
27				360	3-361-231-01	GEAR (T)

(RPC-96009)

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Personal A&V Products Div.

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